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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/750,100	12/29/2000	David E. Baraff	022972-00005	6391

20350 7590 11/23/2004

TOWNSEND AND TOWNSEND AND CREW, LLP
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834

EXAMINER	
STEVENS, THOMAS H	

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 11/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/750,100	BARAFF ET AL.	
	Examiner	Art Unit	
	Thomas H. Stevens	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 September 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 December 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/20/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-4,8,9 were amended.

2. Claims 12-20 were added.

3. Claims 1-20 were examined.

Response to Arguments

Specification

4. The examiner acknowledges corrections to the specification and concurs with applicants that no new matter was added.

Drawings

5. The applicants' are thanked for addressing this issue. No "prior art" statement was added to figures 1a and 1b, by applicants, thus objection stands.

Claim Rejections - 35 USC § 112

6. The applicants' are thanked for addressing this issue. Applicants' explanation of Inertial Field Generator (IFG) is accepted. Rejection is withdrawn (112 1st). However and new 112 1st rejection is applied to " threshold" because no where in the specification does this word exists; but the examiner believes the word is inherently

noted in paragraphs 0036 through 0039, regarding the IFG's filter capabilities (i.e., constraint capability). Clarification is recommended.

7. Rejection to claims 2, 4,and 11 are withdrawn (112 2nd).

Claim Rejections - 35 USC § 102/103

8. Applicants' are thanked for addressing these issues. Examiner withdraws 102 and 103 rejections; however, upon further consideration, a new grounds of rejection is made in view of Popovic ("Physically-based Motion Transformation" (1999))

Rejections

Claim Rejections - 35 USC § 112

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 1-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. No mention of the word "threshold" in the

specification but the examiner is unsure whether the applicant is disclosing constraints or filtering which is disclosed in the specification. Clarification is requested.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Popovic ("Physical-based Motion Transformation" (1999)). Popovic teaches a novel algorithm for transforming character animation sequences that preserves essential physical properties of the motion (abstract: 1st sentence).

Claim 1. A method of simulating relative motion of objects in computer animation comprising: providing a motion of a kinematic object, where the kinematic object (abstract: third paragraph) is an element of a computer animation display (abstract); providing at least one dynamic object associated with said kinematic object, where said at least one dynamic object is another element of the computer animation (section 2, Related Work, left column, 2nd paragraph, 1st sentence with figure 2) display and where motion of said at least one dynamic object is influenced by the motion of the kinematic object, wherein the motion of said at least one dynamic object is simulated using a physically-based numerical technique (section 4.1, Handles); and manipulating the motion (section 3, Algorithm Outline, Spacetime edit and Motion Reconstruction) of said

at least one dynamic object in response to the motion of the kinematic object when the motion of the kinematic object exceeds a predetermined threshold (section 5.3 constraints. Note: examiner equates constraints and threshold since both describe are "limitations" or "barriers" of some series of events); and displaying the elements of the computer animation display, including associated motions of said elements.

Claim 2. A method of simulating relative motion of objects according to claim 1 (abstract; section 2, Related Work, left column, 2nd paragraph, 1st sentence with figure 2; section 3, Algorithm Outline, Spacetime edit and Motion Reconstruction) wherein said manipulating the motion of said at least one dynamic object comprises compensating for motions (section 3, algorithm outline, four main stages) of said at least one dynamic object when the motion of the kinematic object motion exceeds the predetermined threshold (section 5.3, Constraints).

Claim 3. A method of simulating relative motion of objects according to claim 2 (abstract; section 2, Related Work, left column, 2nd paragraph, 1st sentence with figure 2; section 3, Algorithm Outline, Spacetime edit and Motion Reconstruction; section 3, algorithm outline, four main stages; section 5.3, Constraints) the motion of said at least one dynamic object manipulated when the motion of the kinematic object comprises accelerations that are unrealistic for humans (creating limits to the forces of body motion: section 5.2, Muscles and section 5.1, Space Constraints Formulation).

Claim 4. A method of simulating relative motion of objects according to claim 2 (abstract; section 2, Related Work, left column, 2nd paragraph, 1st sentence with figure 2; section 3, Algorithm Outline, Spacetime edit and Motion Reconstruction; section 3, algorithm outline, four main stages; section 5.3, Constraints) wherein the manipulating comprises compensating for the motion of said at least one dynamic object when the kinematic object undergoes accelerated motions above a predetermined limit (Muscles and section 5.1, Space Constraints Formulation, i.e., 5th paragraph: "constrain both of her feet to the floor").

Claim 5. (Original) A method of simulating relative motion of objects according to 2 (abstract; section 2, Related Work, left column, 2nd paragraph, 1st sentence with figure 2; section 3, Algorithm Outline, Spacetime edit and Motion Reconstruction; section 3, algorithm outline, four main stages; section 5.3, Constraints) claim wherein said kinematic object is an animated character and said at least one dynamic object is coupled to the animated character (abstract with figure 2).

Claim 6. (Original) A method of simulating relative motion of objects according to 2 (abstract; section 2, Related Work, left column, 2nd paragraph, 1st sentence with figure 2; section 3, Algorithm Outline, Spacetime edit and Motion Reconstruction; section 3, algorithm outline, four main stages; section 5.3, Constraints) claim wherein said at least one dynamic object is a representation of *hair (not addressed by examiner because it bares little significance to final outcome)* attached to the animated character.

Claim 7. (Original) A method of simulating relative motion of objects according to claim 5 (abstract; section 2, Related Work, left column, 2nd paragraph, 1st sentence with figure 2; section 3, Algorithm Outline, Spacetime edit and Motion Reconstruction; section 3, algorithm outline, four main stages; section 5.3, Constraints) wherein said at least one dynamic object is a representation of *clothing (not addressed by examiner because it bares little significance to final outcome)* attached to the animated character.

Claim 8. A method of simulating relative motion of objects according to claim 1 (abstract; section 2, Related Work, left column, 2nd paragraph, 1st sentence with figure 2; section 3, Algorithm Outline, Spacetime edit and Motion Reconstruction) wherein said at least one dynamic object comprises a first set of dynamic objects and a second set of dynamic objects and manipulating the motion of said at least one dynamic object comprises selectively manipulating motions of said first set of dynamic objects with respect to a first reference point on said kinematic object and selectively manipulating motions of said second set of dynamic objects with respect to a second reference point on said kinematic object (muscle points of reference; section 5.2, Muscles, e.g., equation 4).

Claim 9. A method of simulating relative motion of objects according to claim 1 (abstract; section 2, Related Work, left column, 2nd paragraph, 1st sentence with figure 2; section 3, Algorithm Outline, Spacetime edit and Motion Reconstruction) wherein said at least one dynamic object comprises a plurality of dynamic objects coupled to a

plurality of reference points on said kinematic object and wherein said step the motions motion of said at least one dynamic object comprises manipulating the motions of each of said plurality of dynamic objects with respect to said plurality of reference points coupled thereto (a plurality of muscle points of reference; section 7.1, paragraphs 1 and 2).

Claim 10. A method of simulating relative motion of objects according to claim 9 (abstract; section 2, Related Work, left column, 2nd paragraph, 1st sentence with figure 2; section 3, Algorithm Outline, Spacetime edit and Motion Reconstruction; a plurality of muscle points of reference; section 7.1, paragraphs 1 and 2 with figure 2) wherein said kinematic object is an animated character and said plurality of dynamic objects are coupled to the animated character and said plurality of reference points are different points on the animated character.

Claim 11. A method of simulating relative motion of objects according to claim 9 abstract; section 2, Related Work, left column, 2nd paragraph, 1st sentence with figure 2; section 3, Algorithm Outline, Spacetime edit and Motion Reconstruction; a plurality of muscle points of reference; section 7.1, paragraphs 1 and 2) wherein manipulating comprises compensating for motions of said plurality of dynamic objects when the kinematic object undergoes exaggerated motion (to prevent exaggerated motion: section 5.3 Constraints).

Claim 12. The method of claim 1 (abstract; section 2, Related Work, left column, 2nd paragraph, 1st sentence with figure 2; section 3, Algorithm Outline, Spacetime edit and Motion Reconstruction) wherein manipulating the motion of said at least one dynamic object comprises manipulating the motion of the said at least one dynamic object when acceleration of the kinematic object exceeds the predetermined threshold (examiner assumes changing the previous limitations to establish a new constraint or threshold: section 6, Spacetime Edit).

Claim 13. A computer animation system comprising (abstract, with section 2, related work, 3rd paragraph, first sentence): a processor; a display; wherein the processor is configured to: receive information specifying motion for a kinematic object (abstract: last paragraph); compute motion for a dynamic object based upon the motion of the kinematic object, wherein the motion of the dynamic object is specified using a physically-based numerical technique (section 4.1 with equations 1 and 2; and section 7.1); and manipulate the motion of the dynamic object in response to the motion of the kinematic object when the motion of the kinematic object exceeds a predetermined threshold (section 5.3 constraints. Note: examiner equates constraints and threshold since both describe are "limitations" or "barriers" of some series of events); and wherein the display is configured to display the kinematic object and the dynamic object and their associated motions (computer display: inherent).

Claim 14. The method of claim 13 (abstract, with section 2, related work, 3rd paragraph, first sentence; section 4.1 with equations 1 and 2; and section 7.1; section 5.3 constraints. Note: examiner equates constraints and threshold since both describe are "limitations" or "barriers" of some series of events) wherein the processor is configured to manipulate the motion of the dynamic object when acceleration of the kinematic object exceeds the predetermined threshold (examiner assumes changing the previous limitations to establish a new constraint or threshold: section 6, Spacetime Edit).

Claim 15. The method of claim 13 (abstract, with section 2, related work, 3rd paragraph, first sentence; section 4.1 with equations 1 and 2; and section 7.1; section 5.3 constraints. Note: examiner equates constraints and threshold since both describe are "limitations" or "barriers" of some series of events) wherein the kinematic object represents an animated character and the dynamic object represents a *hair (not addressed by examiner because it bares little significance to final outcome)* attached to the animated character.

Claim 16. The method of claim 13 (abstract, with section 2, related work, 3rd paragraph, first sentence; section 4.1 with equations 1 and 2; and section 7.1; section 5.3 constraints. Note: examiner equates constraints and threshold since both describe are "limitations" or "barriers" of some series of events) wherein the kinematic object represent an animated character and the dynamic object represents *clothing (not*

addressed by examiner because it bares little significance to final outcome) attached to the animated character.

Claim 17. A computer animation apparatus comprising: means for receiving information specifying motion for a kinematic object (abstract); means for computing motion for a dynamic object based upon the motion of the kinematic object, wherein the motion of the dynamic object is specified using a physically-based numerical technique (abstract: last paragraph); means for manipulating the motion of the dynamic object in response to the motion of the kinematic object when the motion of the kinematic object exceeds a predetermined threshold(to prevent exaggerated motion: section 5.3 Constraints); and means for displaying the kinematic object and the dynamic object and their associated motions (computer display: inherent).

Claim 18. A computer program product stored on a computer-readable storage medium for simulating relative motion of objects, the computer program product comprising: code for receiving information specifying motion for a kinematic object (all computer programs originate via code: inherent; with abstract); code for computing motion for a dynamic object based upon the motion of the kinematic object, wherein the motion of the dynamic object is specified using a physically-based numerical technique (abstract with sections 7.1 and 4.1); code for manipulating the motion of the dynamic object (inherent to the scope of the invention, coupled with abstract) in response to the motion of the kinematic object when the motion of the kinematic object exceeds a

predetermined threshold; and code for displaying the kinematic object and the dynamic object and their associated motions (section 5.3 Constraints; with equations 3 and 4 in sections 5.1 and 5.2, respectively).

Claim 19. A computer-implemented method of simulating relative motion of objects in computer animation (abstract with section 2, Introduction, 3rd paragraph, 1st sentence), the method comprising: receiving information specifying motion for a kinematic object (section 3, algorithm outline); computing motion for a dynamic object based upon the motion of the kinematic object, wherein the motion of the dynamic object is specified using a physically-based numerical technique (section 3, algorithm outline with equations 1-4); and manipulating the motion of the dynamic object (section 5.2, equation 4 with section 5.1 paragraph 5-6) in response to the motion of the kinematic object when the motion of the kinematic object exceeds a predetermined threshold (section 5.3, Constraints).

Claim 20. The method of claim 19(abstract with section 2, Introduction, 3rd paragraph, 1st sentence; section 3, algorithm outline; section 5.2, equation 4 with section 5.1 paragraph 5-6) wherein manipulating the motion of the dynamic object comprises manipulating the motion of the dynamic object when acceleration of the kinematic object exceeds the predetermined threshold (examiner assumes changing the previous limitations to establish a new constraint or threshold: section 6, Spacetime Edit).

Conclusion

12. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Tom Stevens whose telephone number is (571) 271-0365, Monday-Friday (8:00 am- 4:30 pm) or contact Supervisor Mr. Kevin Teska at (571) 272-3716. The fax number for the group is 703-308-1396.

Any inquires of general nature or relating to the status of this application should be directed to the Group receptionist whose phone number is (571) 272-1400

November 15, 2004

THS

KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER